

REMARKS

Claims 1-15 were pending. Claim 1 is amended herein without prejudice and without acquiescence, finding support in the specification at least in the originally filed application at claim 8 and at page 7, line 18 to page 8, line 2 of the originally filed specification. Claim 8 is cancelled herein. No new matter has been added herein.

I. Issue Under 35 USC § 103(a)

A. Claims 1-12 and 15

Claim 2 was rejected under 35 USC § 103(a) as allegedly being unpatentable over Mian et al. (U.S. Patent No. 6,319,469; “Mian”) and in view of Sucholeiki (U.S. Patent No. 5,858,384; “Sucholeiki”). Applicants respectfully disagree.

The Examiner contends that claims 1-12 and 15 are unpatentable over Mian in view of Sucholeiki. On page 7 of the Action, the Examiner states that Mian discloses the subject matter of claim 8 at Fig. 13B and col. 26 lines 15-24, *i.e.* that the “reaction microcavity in at least one of said microchannel structures in the upstream direction is connected to a volume-metering unit”.

The present invention according to amended claim 1 (which now incorporates the subject matter of claim 8) differs from Mian at least in that the “reaction microcavity in at least one of said microchannel structures in the upstream direction is connected to a volume-metering unit *located to a particular subarea of the one or more microfluidic devices*” (emphasis added). In the present invention, the volume-metering unit is a part of the same device as the microchannel structures. Contrary to this, Mian discloses that the volume-metering unit and the microchannel structures are two separate devices (Fig. 13B and col. 26 lines 15-24). Mian clearly discloses a set up with a separate unit for volume metering, and a further separate device with microchannel structures for further liquid handling. Mian, Sucholeiki, and the combination thereof fail to provide any teachings, suggestions, or a reasons under *KSR* (*KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 [82 USPQ2d 1385] (2007)) to achieve at least the above feature of the present invention.

Obviousness requires a suggestion of all the elements in a claim (*CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1342 [68 USPQ2d 1940] (Fed. Cir. 2003)) and “a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 [82 USPQ2d 1385] (2007).

Mian discloses the use of positive or negative pressure to move liquid aliquots from the volume-metering unit to the microchannel structures (col. 26, lines 15-28). This transfer of liquid is by definition done after volume-metering, and accordingly there is a risk for contamination, sample losses due to evaporation, *etc.* This teaches away from the present invention, which enables volume-metering and subsequent liquid handling steps to be handled in a single device. In particular, the volume defining step is done on the device, not in an external autosampler as with Mian. This is a significant technological difference, because it would not be practical to apply the volume defining unit of Mian directly on the microfluidic device.

Mian also teaches away from Sucholeiki, and, therefore, the skilled artisan would have no reason to combine the elements therein to achieve the claimed invention. The claimed invention utilizes particles having surfaces exposing a plurality of polar functional groups such that the surfaces are hydrophilic. Mian teaches away from both Sucholeiki and the claimed invention by teaching the skilled artisan to employ a solid phase with Dynabeads, which are hydrophobic. No skilled artisan would combine Sucholeiki and Mian, particularly because such beads would drastically alter the properties of Mian, and if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Furthermore, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, as it would be utilizing beads of wholly opposite chemistry, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Accordingly, Applicants assert that the claimed invention is not obvious in light of the combination of Mian and Sucholeiki and respectfully request withdrawal of the rejection.

B. Claims 13-14

Claims 13-14 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Mian in view of Sucholeiki and further in view of Jacobs (U.S. Patent Application Publication US2002/0095073; “Jacobs”).

As described above, Mian teaches away from the claimed invention and from Sucholeiki, and Applicants assert that the combination of Mian with Sucholeiki and Jacobs for claims 13-14 also teaches away from the claimed invention.

Applicants respectfully request withdrawal of the rejection.

II. Conclusion

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Applicants believe that no fee is due with this response other than the fee for the Petition for Extension of Time of Three Months. However, if a fee is due, please charge our Deposit Account No. 06-2375, under Order No. HO-P02774US1 from which the undersigned is authorized to draw.

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Respectfully submitted,

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